

Hydrogen uptake during atmospheric corrosion of galvanized steel

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Already very low hydrogen concentrations can cause hydrogen embrittlement of high strength materials. In this paper first results on hydrogen uptake during atmospheric corrosion of galvanized steels will be presented, achieved with a novel method that allows the spatially resolved, ultra-sensitive measurements of hydrogen in steels and other alloys as well as its uptake into and permeation through them [1-3]. It will be shown that even under mild atmospheric corrosion conditions hydrogen uptake does not only occur when steel is exposed at scratches, but also through the intact zinc coating.

[1] C. Senöz, S. Evers, M. Stratmann and M. Rohwerder, *Electrochem. Commun.* 13 (2012)1542

[2] S. Evers, M. Rohwerder, *Electrochem. Commun.* 24 (2012) 85

[3] S. Evers, S. Ceylan, M. Rohwerder, *Science and Technology of Advanced Materials* 14 (2013) 014201